VICTOR

CYCLES.

Overman Wheel Co.

182 · 188 Columbus Ave.

BOSTON.

1889 RE

OFFICE AND SALESROOMS:

182-188 COLUMBUS AVENUE, BOSTON.

FACTORY:

CHICOPEE FALLS, MASS.

SPECIAL AGENTS.

A. G. SPALDING & BROS., NEW YORK.

A. G. SPALDING & BROS., CHICAGO.

Geo. H. Walker & Co., Catalogue Makers, Boston.

TL 435 .O83 V53 1889

OVERMAN WHEEL COMPANY.

1889.

FOR SEVEN YEARS we have been making high grade Cycles.

We were among the first to appreciate the fact that in wheels mankind was destined to find compensation for the wings denied him by nature. Firmly believing in this theory we went into the business "to stay", and devoted ourselves to perfecting the practice.

Our every move has been based on the idea of permanency, and our object to maintain the first place in our line. With this object we could not be content to keep pace with others, but have constantly been reaching up and ahead, searching for new and valuable features—and finding them.

New features are not always improvements. Much threshing is needed to separate grain from chaff.

We have at all times kept careful watch of the development of the art, which alone would not insure success, but which, in connection with that keen Yankee wit, which, never satisfied, strives ever for something better, has produced the Victors of today. We believe that the wheels we offer the public are in no way inferior to the best the world has shown, and that

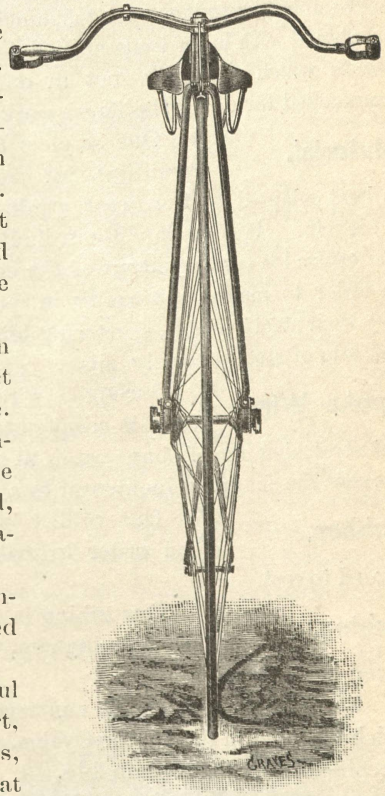

FIG. 1—FRONT VIEW VICTOR LIGHT ROADSTER.

I have tried all the leading makes of "so called safeties" and for ease, comfort, and durability I think the Victor has **NO EQUAL.**

AUGUST KINNE, Richfield Springs, N. Y.

in many points they will show results of the aforesaid Yankee wit.

As the horseman is judged by his beast, so is the cyclist by his wheel.

"The apparel oft proclaims the man;"

and to-day, he who rides a Victor is looked upon as a wheelman of judgment. His choice is sufficient proof that he appreciates merit.

Whether mounting the hill, coasting the grade, or spinning the long miles, the Victor is nowhere less than Victor.

We will not burden the public with descriptions of intricate machinery and detailed accounts of methods. Processes are nothing, products everything, and it is needless for us to assure riders that it would be impossible to produce such machines without the best plant and materials, combined with labor long skilled in the art of cycle making—requirements which are fully met in our own factory, fitted with machinery unexcelled for doing the finest work.

Material. Our steel is the result of a great deal of experimenting, for the purpose of finding out what steel is best adapted to the great strain to be borne in the various parts of a bicycle. It is made without limit as to the cost of production; and the entire lot for the output of the coming year was made at one time, in order to insure uniformity in quality. This cannot be when makers buy their steel in small, scattering lots, as it is impossible to make different lots of steel precisely alike.

Spoke Wire. Our spoke wire is made especially for the purpose, and is adapted to stand the tension in the wheel without stretching out of shape, and, at the same time, to be soft enough to prevent the snapping incidental to a brittle wire.

Rubber. Our rubber is the finest Para gum, made under an order to make the finest tire possible, without regard to cost.

Tubing. Our tubing is all made by the Credenda Company, of Birmingham, Eng., and is the best quality produced in the world.

So we might continue to enumerate the various articles of material which are used in the Victor Cycles, and could say of each article mentioned—it is the best obtainable.

Bearings. Two points, above all others, are important in cycle-making—rigidity and minimum friction. To both we have given a great deal of attention, and will ask the reader to study the following description, and learn how we have made a bicycle as rigid as a steel bar and with so little friction that the wheels almost seem to run themselves.

The Victor Safety is the only machine of its class that I would care to ride.

ARTHUR BROWN, Alameda, Cal.

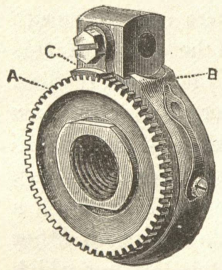

FIG 2.
BOWN BALL BEARING.

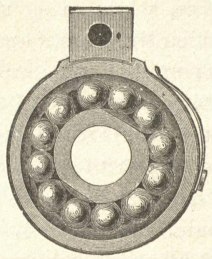

FIG. 3.
CAP REMOVED.

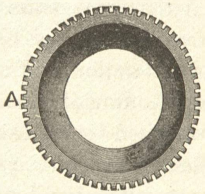

FIG. 4.
CAP.

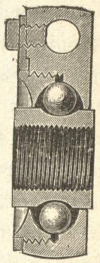

FIG 5.
SECTION.

NOTE.—The cap A bears equally on all balls. By screwing it up one notch the space allowed to each ball is lessened by $\frac{1}{1500}$ part of an inch making a perfect adjustment for wear.

The enemy which cycle makers have most to contend with is friction. The question of cycle journal bearings has been a wide and troublesome one from the beginning. Two great obstacles were to be overcome; first, friction; second, wear. A bearing may be ever so nicely fitted, but without perfect means for adjustment it will soon wear and become loose. It is now conceded by all that cycle bearings must be balls, so arranged that a single row or circle of them will form a complete journal bearing. The balls and the surfaces on which they travel must be as hard as glass, and above all and most important, there must be perfect means for adjusting the surfaces which come in contact with the balls, so that when there is wear, even though it be as little as the fifteen hundredth part of an inch, the bearing can be altered to compensate for such wear. In a word, a cycle bearing must be in that apparently paradoxical condition, at the same time very tight and very loose; that is, perfectly free to spin and entirely rigid, allowing no shake in the parts. It can be seen by any one, mechanic or not, that cycle parts must travel in the course intended, and avoid the slightest deviation from that track.

To accomplish these results many devices have been tried, and hundreds of patents taken out in this country and Europe. In 1877 there was patented to William Bown, of England, the invention of Joseph Henry Hughes, which promised to fulfil all the requirements of a perfectly adjustable ball bearing for cycles, and it is needless to say that the invention

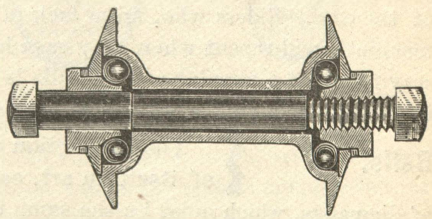

FIG. 6—SECTIONAL VIEW OF REAR HUB.

The Victor Light Roadster is, in my opinion, by far the easiest running and staunchest wheel in use. It is perhaps worthy of mention that those who have once ridden a "Victor" desire no different mount.

H. B. MILLS, Oswego, N. Y.

was warmly welcomed by all riders, while many makers and inventors attempted to find a method by which they could evade the claims of this patent, and at the same time accomplish practically the same results. After 12 years, during which time hundreds of other plans have been tried and much litigation had in the courts with those who have attempted to appropriate the device, the Bown patent to-day is stronger than ever, and is acknowledged by all fair minds to be the only method by which a practical cycle bearing can be made. It is a fact, to-day, that no other bearing is succeeding, and that all modifications of this bearing which have any practicability, are paying a royalty for the use of this patent, and their makers are only introducing modifications in order to claim an individual bearing. The principal makers of the world pay tribute to this invention. In 1884 we purchased of Mr. Bown the United States patent for this invention, and have since been exclusive owners. We are therefore owners of the principal patent which bears upon cycle-making. In the Victor Light Roadster there are no bearings except ball bearings. It is customary with some makers to add these expensive bearings to the different parts only as ordered, charging extra for each pair of ball bearings. As we believe these essential, we use nothing else. The illustrations will show the very simple and perfect method for adjustment used in Bown's ball bearings.

Makers who are not licensed to use this patent have adopted the old-fashioned and long abandoned method of making the lower half of the ball case movable toward the upper half, in order to compensate for wear of balls and cases. This is purely a makeshift to avoid the expense of a license under the Bown patent, and inevitably results in a bearing worn to an ellipse and out of true. While such a bearing would appear right when new, it would immediately wear into a wabble fit, making a rattling machine with loose joints. The joints in the body of the case are another defect in such bearings, as the balls in running over the joints will soon dent down the edges and make a chuck hole in each side of the case. Riders who, from lack of mechanical knowledge, buy such machines, will repent when they have learned by experience that the only way to adjust a circular row of balls is by means of a cap screwing up from the side in such a way as to bear equally on all balls.

Balls. The production of steel balls for cycle bearings is of itself an art, each ball having an infinite number of diameters, which must be the same if the ball is round, and it must be round. An idea of the nicety of the calculation necessary in making these balls may be had from the fact that they are gauged to $\frac{1}{4000}$ part of an inch. While a number of makers have been able to produce round

I ride my Victor Safety with greater comfort than any other wheel I ever owned. It is a "Thoroughbred." *GEO. D. METCALF, Berkeley, Cal.*

balls, we know of but one make of ball in which uniformity of size is obtained. These are known as Æolus balls and are used in all our bearings, which fact will be appreciated by experienced riders. Heretofore, in replacing a ball, the bearing has been almost invariably thrown out of true by the introduction of a ball of different size. It is apparent that if one ball is $\frac{1}{1000}$ of an inch larger than its fellows this one ball will take all the strain until it has either plowed a furrow in the case, or is itself crushed. In either case the bearing is ruined. Riders are cautioned to use only Æolus balls in Victor bearings, and to obtain them directly from us or responsible agents, as it would be impossible for riders to detect the minute differences without micrometers. The sizes used are as follows: In pedals, 187½ one-thousandths; in front and back wheels, 312½ one-thousandths.

The Æolus balls are rolled cold, instead of being turned, as a great many balls are which are now on the market. It is impossible to use the highest grade steel in a turned ball. A low grade steel must be used, since it is evident that a cutting tool can only cut material which is much softer than the material of which the tool itself is made. Turned balls cannot be made of tool steel. Nothing else is used in the Æolus balls.

Rims. We were the first American makers to manufacture hollow rims, and have adopted the one which has

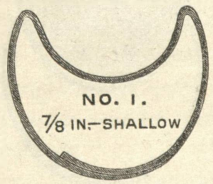

FIG 7.

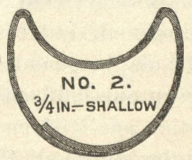

FIG. 8.

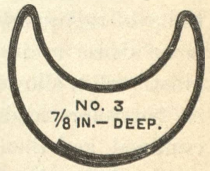

FIG. 9.

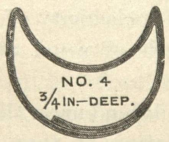

FIG. 10.

FIG. 11.

FIG. 12.

been found best to stand the test of use on American roads. Our hollow rim is made of a single piece of cold rolled sheet steel, so lapped as to give double thickness in the bottom, where the spokes are attached, and where the greatest strain is; likewise double the body of metal in which to form the bed for the nipple-head, thus preventing the nipple from bedding or necking into the rim-hole, as is sure to be the case where the

I have ridden them all, and have at last found one that is about perfect. I would not part with my Victor Safety for any money, if I could not replace it.
PERCY HAZLITT, Alameda, Cal.

attempt is made to seat a nipple in too thin steel. The importance of a rigid rim cannot be overestimated. If the rim is out the wheel is wrong. The hollow rim, as made by us, has two distinct features not found elsewhere: first, we use a heavier and stiffer steel; second, the tire chamber is shallower.

As we do not use cement with our compressed tires, we do not have to provide storage room in the rim for the wax; and as our method of attaching is positive, and does not depend on the amount of contact between rim and rubber, we are able to make a very shallow rim, which, while most of its advantages accrue to the tire, possesses this advantage for the rim—that being very shallow, it has great lateral strength.

By the use of this rim, and the combination with it of the tangent spoke, we produce a wheel which it will be found simply impossible to buckle.

Buckling, or springing out of round on receiving a lateral strain, is the most common of difficulties with bicycle wheels.

Tires. No feature in wheel-making bears more directly upon the comfort and safety of rider and machine than the rubber band which encircles the wheel. We are indebted to rubber for our enjoyment of cycling. The requirements of a tire are, first, elasticity; second, durability; third, perfect attachment to the wheel. The elasticity of rubber depends upon displacement. Rubber is as dense as iron when confined, but thoroughly elastic when allowed room for displacement. Tires, as heretofore made, have been one-half outside, unconfined, and therefore elastic, one-half inside, and confined, therefore inelastic—the inner half of the tire serving only for the purpose of attaching the rubber to the rim, thus contributing almost nothing to the elasticity of the tire, —so that for this purpose it might as well be made of wood or leather. See Fig. 13, sectional view of Victor rim and tire.

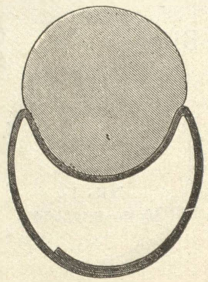

FIG. 13.

As stated under the head of rims, we do not depend upon the amount of contact between rubber and rim, in attaching tires, so that we make the tire-chamber of our rim exceedingly shallow, thus exposing, and consequently rendering useful, a much greater proportion of the tire than is exposed by any other method.

The elasticity of our seven-eighths inch tire is equal to a one and one eighth inch tire attached by cement. Durability of the tire is insured by our compressed method, as we do not stretch the rubber, but use a tire

My Victor Safety is a universal favorite, and many of my friends are looking forward to the time when they can purchase one. Am more than satisfied with mine.

WM. LINDER, No. 573 No. Penn St., Indianapolis, Ind.

larger than the wheel, and compress it into the rim by means of clamping machinery. A tire which is stretched into the rim tears open at every cut, soon becoming ragged and ruined by contact with the stones and uneven surfaces of the roads, while cuts in compressed tires close up and do not enlarge. Rubber, when compressed, is far less easily cut, the tendency being to temporarily dent the rubber, instead of cutting into it, as is the case in a stretched rubber which resists pressure. We claim that the Victor compressed tire will wear twice as long as the ordinary stretched tire fastened with cement.

If the tire is attached in such a way that it can be pulled out (which means that it can come out on the road) it is not useful, but dangerous. We are the only makers in the world who guarantee tires to stay in, and who invite the public to pull them out if they can. Our tires will be torn to pieces, bit by bit, before they will part from the rim. We use no cement, but by a chemical process, which admits of the tire being easily taken out to replace spokes, we attach the rubber directly to the rim.

This tire is so good that competitors have found it necessary to invent objections to it, and the report has been circulated that Victor wheels must be returned to the factory to have a spoke replaced. This found credence with some riders, because they were unable to force the tires out, and were not aware of the fact that by the application of heat to the rim, though in no other way, Victor tires may be quickly and easily detached, and perfectly replaced. [Full particulars sent on application.] It is not necessary to take the tire out in order to replace or alter the tension of a spoke. By means of a nipple grip [by mail, sixty cents] the nipples can be turned to replace a spoke, thus leaving the tire undisturbed.

The Victor compressed tire cannot be appreciated without mounting the wheel. All vibration is lessened. We have abandoned red sulphuret of antimony, as its only use is to adulterate the rubber and give it a red color. We are using the finest Para gum, with no addition except sulphur enough to vulcanize the rubber, thus making the purest tire possible. It is much more expensive than the antimony tire, but gives far better results in wear. Our tires, then, will be found to be a grey black, or the color of virgin gum. We have named our tire the "compressed tire". It differs from other tires in these respects only; first, it is a pure, gum rubber; second, it is not stretched, as all others are, but is made larger than the rim, and compressed into the rim; third, it is attached without wax, or tire cement, by a chemical process, uniting the rubber directly

I bought two of your Victor Safeties from your Utica Agent last week. They are "immense"—if you will allow the slang phrase. I learned to ride mine in an hour and wouldn't give it for the best team and carriage in our city.

REV. G. A. BIERDEMAN, 119 Dariot St., Utica, N. Y.

with the rim. The compressed tire originated with us, and is controlled by us. Our price for compressing tires into the wheels of other bicycles is ten dollars a pair. We therefore consider that the Victor bicycle is worth ten dollars more on this account.

One of the departments of our factory is a thoroughly equipped laboratory, in which the chemical part of our tire process will be performed, together with all other chemical processes and manufactures of the Company.

This laboratory is in charge of a professional chemist; therefore the best results are assured.

Weldless Steel Tubing. This is used for all hollow parts, and everything is hollow that will admit of it. This tubing is a marvel of strength and lightness, and is essential to the best work. It is very thin, and is finished inside and out to a gauge. There is not a seam nor a joint in it, thus making an ideal frame for cycles. Our spines, forks, handle-bars and pedal-centers are all made of this tubing.

Prices.

Regarding prices we beg to inform the public that Victor Cycles are sold at the prices mentioned in the list, and no discounts can be made from them. The fact that machines can be bought at almost any price does not in any way govern the disposition of our product. Our construction, using as we do the best in every case, is necessarily so expensive that we cannot sell for less than the prices named. It will be found that our agents uniformly decline, as do we, to make any concession in the matter of prices. That we are able to dispose of our product on this basis, while other dealers make various inducements aside from the quality of their goods, proves conclusively the merits of the Victors.

I am very thankful to you for advising me to buy a Victor wheel. I have ridden a Victor Light Roadster since last June, covering over 2000 miles over very rough roads, and not a cent for repairs yet. The tire alone is worth its weight in gold.

ARTHUR H. PLANTE, Kankakee, Ill.

The Victor Light Roadster Bicycle.

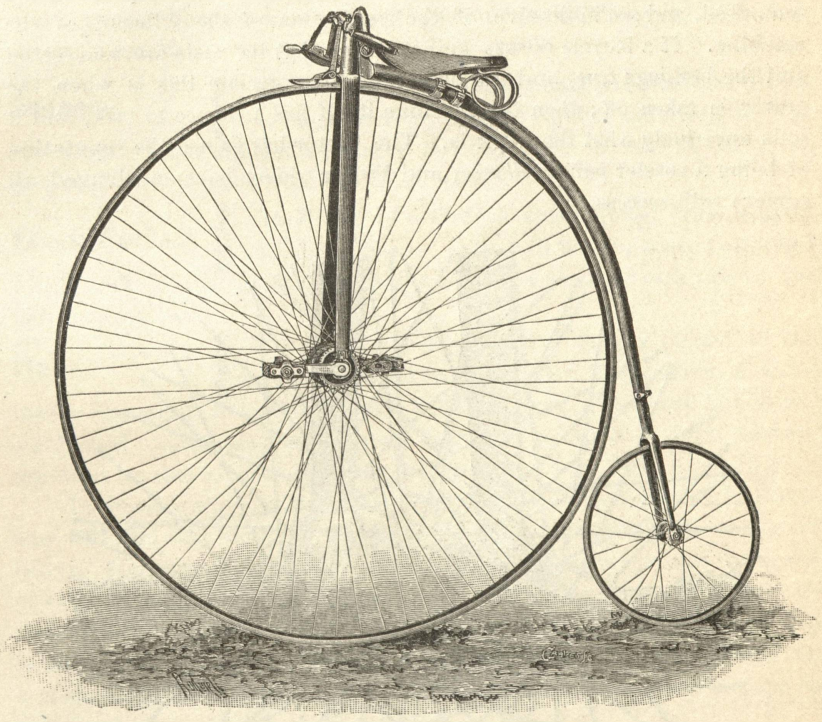

FIG. 14.—VICTOR LIGHT ROADSTER.

This machine has the distinction of having been the first high grade bicycle made in America. By this we mean that it was the first American bicycle to be placed on the general market with hollow rims, tangent spokes, and made entirely of forged steel. It was also the first machine to be furnished with a suspension saddle, and the Victor Saddle, practically unchanged, still remains the most popular in use. The Victor bicycle was placed upon the market for $125.00 for a 50 inch.

To-day the price remains the same, and no substantial variation has been made in the features of the machine.

Among old riders it will not be necessary for us to enlarge upon its merits. Where hills have been climbed, where great road races have been run, where wheels have been tested to their very utmost, the Victor

I have ridden the Victor Bicycle since the beginning of the Season of 1888, and find it the easiest riding wheel in the market, and the one that requires the least repairs.

WM. R. LIPSEK, San Jose, Cal.

has been found at the front to tell its own story. It has won for itself a name second to none, and we but echo the claims of its riders when we say that it is entitled to stand at the head. Among its many points of superiority those of coasting and hill-climbing have been particularly remarked, and are indicative of the perfection of the "lines" of the machine. If a bicycle coasts well it shows that the parts are well fitted and the bearings true, and the only time to appreciate this is when the power is taken off; then the machine itself has a chance to talk, and it tells unerringly what the work is. The Victor has gained the reputation of being a coaster *par excellence*, and Victor riders have challenged all comers with success.

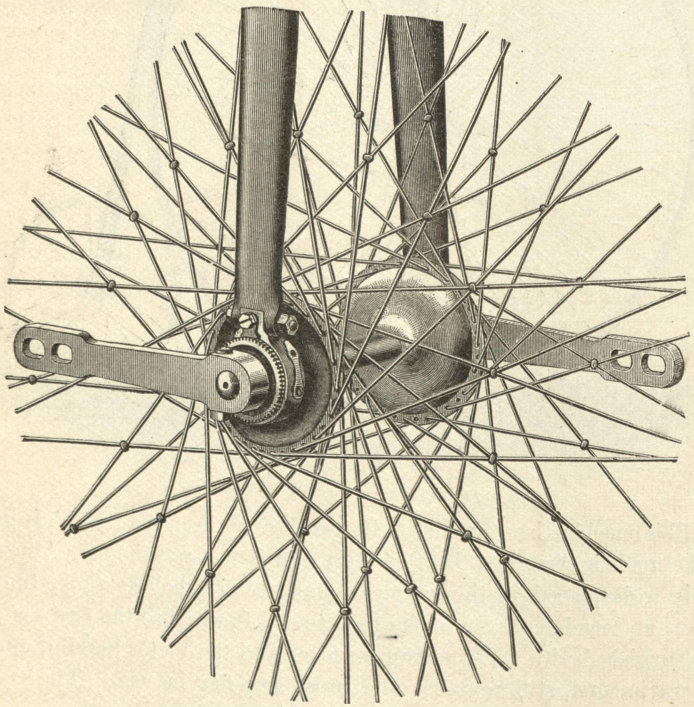

FIG. 15—SHOWING HUB, CRANK AND ARRANGEMENT OF SPOKES.

No greater strain is put upon a machine than in hill climbing, and not only is it a test of the durability of the work, but it is also a test of the running quality. A clumsy machine is a hard hill-climber. Ask any Victor rider how his machine coasts and how it climbs hills.

We want to be understood to say that the Victor Light Roadster

I have one of your Victor Safety Bicycles. Have had it since June last. Would not exchange for any other. *GEO. B. DRAPER, Pawtucket, R. I.*

contains absolutely no cast metal, and the machine is so guaranteed. The cheap way to make parts is to use a wooden pattern, and from it have castings made. The expensive way, and the way which we have adopted, is to make steel dies for each piece and forge the pieces from steel, thus insuring accurate form without the tendency to flaws incidental to castings.

Spines. Spines are of inch-and-a-half weldless steel tubing—a large section, to give rigidity and strength. The rear fork is made straight instead of curving back, in order to carry the step a proper distance from the front wheel.

Front Forks. These are of weldless steel tubing, with closed, dust proof head. The ball bearing case is attached to the fork, so that the fork rests directly on a shoulder each side of the ball bearing case.

Hubs. The front wheel hubs have flanges pinned to the axle and brazed to a shoulder, thus making it absolutely impossible to loosen the axle in the flanges. The small hub is one solid steel forging, making it a very light and strong hub. Felt washers are used on this to make bearings dust-proof. (See Figs. 6 and 15.)

In small matters as well as large the critic of the Victor Light Roadster will find that vigilance has been shown in consulting the needs of riders. Heretofore dust shields have rattled, and there has been no means of oiling the lower step in the steering head. Our dust shields are attached rigidly to the swivel head, and cannot rattle, and the lower step is oiled by throwing the backbone to the extreme right, thus opening up a hole which leads directly to the lower step, which is closed except in this position.

Handle Bar. This handle bar is made of weldless steel tubing, tapered and curved, giving it a graceful appearance and great rigidity. The tip to which the handle is attached is formed by drawing the tubing down, instead of attaching a separate piece, which is liable to break. (See Figs. 1 and 16.)

The Handles. The handles are of black, vulcanized rubber, which will be found very strong. The spade handle is used as it is the one most generally demanded.

Spokes. Our spokes are true tangent, which is one of the reasons why the Victor Bicycle climbs hills so easily.

The cheap way to make a wheel is to use direct spokes; but this is not the best way. Spokes have two uses,—primarily, to hold the hub in position; secondarily, to convey to the rim the power applied to the

We are well pleased with the Victor wheels. They give the best satisfaction, and rarely come in for repairs. *SEARS & CO., Oakland, Cal.*

pedal. If it is to stand the strain of the power applied at the pedal, is it not best that the spoke should lie in the direction of the strain?

Much could be written on this point—too much that is not to the point has been said. To demonstrate the difference between tangent and direct spokes, stand at arm's length from a man, face to face with him, and hook your forefinger into the front of his vest around a button. In this position consider him as representing a hub, and your arm a spoke. Now let him attempt to turn his back to you. It will be observed that he can turn with perfect ease until the relative position of your arm to his body becomes the same as that of a tangent spoke to the hub of a wheel. At this point his progress is arrested, and you hold him easily.

Again, take the average number of direct spokes in a wheel—say fifty—and fasten one end of the bundle in a vise. Take hold of the free end and push it sidewise. With one hand you can bend them double. Note the fact that their combined lateral strength is fifty times that of a single spoke. Then fasten one spoke in the vise and pull directly endwise on it. Fifty men could not break it, because it pulls tangent, or in the direction of the strain. In using direct spokes a large part of the work consists in twisting the hub around until the spokes begin to pull tangent. In using tangent spokes the power applied to the pedals is communicated directly to the periphery of the wheel.

In all wheels fifty-four inch and under we use seventy-two spokes; fifty-six inch and above, eighty spokes. We think it well to have plenty of spokes. Small wheels all have twenty-four spokes. All spokes are tied with steel wires at each crossing and soldered, and attached at the rim by means of long nipples, having fifty-six threads to the inch, and counter-bored, so that the strain on the spoke will not come on the thread, but on the full sized wire. (See Figs. 15 and 16.)

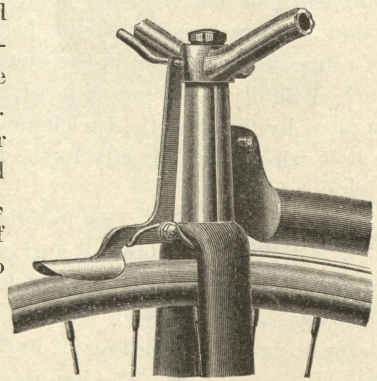

FIG. 16—VICTOR HEAD SHOWING MANNER OF ATTACHING HANDLE BAR.

The Steering Head. This is made with hardened steel cones, polished as smooth as glass, and so fitted that they can be easily oiled. This makes the easiest working and most serviceable head. We do not believe in a ball head for bicycles. It introduces complication and

I ride a Victor L. R. '88 pattern, which mount I consider the best for beauty of lines, finish, easy running qualities and durability. The hollow rim and compressed tire are as "fine as silk". JOHN H. DOWNING, Portsmouth, Va.

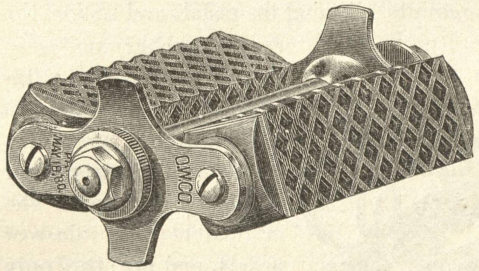

FIG. 17—SQUARE RUBBER PEDAL.

multiplicity of parts, and weakens not only the head, but the swivel. The motion at this point will not average more than one-fifth of a circle, consequently the balls are worn in spots only, and are not constantly trued by complete revolutions, as in ball bearings in other parts of the machine.

Though the best ball bearing heads are not controlled by patents, they are not used by any of the principal makers.

Cranks. Cranks are made with two holes, instead of slots. (See Fig. 15.) This is a very expensive construction, as it costs twice as much to broach out two holes as one, and broaching is expensive work. We do this, because, as the pedal pin exactly fills the square-cornered hole in which it may be set, the strain is thrown on the crank, which is stronger and better able to stand it than the pedal-pin itself, and also in order to insure uniformity of throw, as by observation we find that where riders use a slotted crank, they set the pedals by guess, and almost invariably are found to use one longer than the other. This breaks the rhythm of the pedalling. If riders differ from us in this theory, they have only to file out the web between the holes, and have the old-fashioned slotted crank.

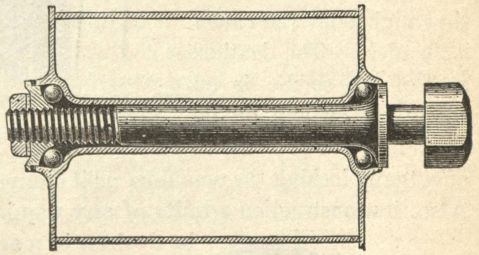

FIG. 18—SECTIONAL VIEW OF PEDAL, SHOWING BALL BEARINGS.

We shall hereafter make two lengths of cranks, to be known as "regular" and "long". The "regular" is the crank used in the Victor Light Roadster, unless otherwise specified, its throws being 5 and 5¾ inches. The "long" has two throws—6¼ and 6¾ inches. Either of these lengths will be furnished at the option of the rider. Cranks are keyed with round, taper pins.

Pedals. Our square rubber ball pedals have during the past two years continued to grow in favor, and are more generally used than ever. Their great success is due to the feature of automatic adjustment to the curve of the foot, which is the result of the

I have had some very fine riding out of the Victor in the two months I have had it and would not exchange it for two or three of the old style wheels.

JAS. H. LANG, Parkersburg, W. Va.

square rubber used. This prevents slipping the pedal, and makes the square rubber pedal as safe as a rat trap, without its discomforts. All Victor cycles are furnished with square rubber pedals. We were the originators of this class of pedals, and are the only makers who present this device with none of its merits omitted.

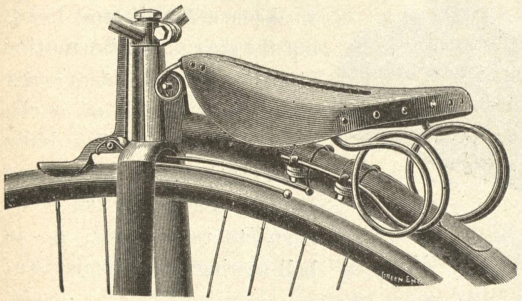

FIG. 19—VICTOR SWING SADDLE,

Saddle.

The saddle is the connecting link between the rider and the ridden, and if not entirely right will be a constant source of discomfort. The Victor Saddle is entirely right, and shows more good points than any other.

The jar of the machine wears itself away in passing through the long coils of the spring, and by its peculiar construction it has a fore-and-aft swing which cushions the jar that might otherwise cause a header. The leather seat of the saddle is as easily put on and off as one's hat—it can be taken off at every stop, thus keeping the seat dry, and effectually locking the machine, as it cannot be ridden without the saddle. Also, its construction admits of any required tension. It leaves little to be desired in a saddle. Its merits are attested by the numerous inferior copies placed upon the market.

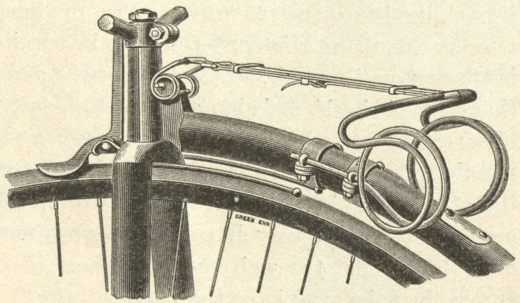

FIG. 20—VICTOR SWING SADDLE, WITH LEATHER OFF

The Step.

Our experience has taught us that bicycle steps are wanted and are not wanted, in a great variety of ways. We therefore put on our machine a light, adjustable step, which can be placed wherever the rider wishes, or, better still, left off entirely.

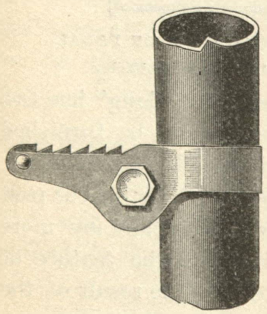

FIG. 21.

I have used the regular large wheel for a number of years, but the Victor Safety leads them all. *C. F. HOVEY, Rochester, N. Y.*

The teeth, which prevent the slipping of the foot from the step, are carefully turned in to avoid the possibility of their catching and tearing the clothing.

Finish.

We make two finishes—standard, with spokes, rims, backbone and fork sides in Victor black enamel, and all other parts nickeled on copper. Extra, all nickeled on copper, except rims and spokes, which are finished in Victor enamel. For this latter finish we charge ten dollars per machine extra. Forged steel is hardest and stiffest on the outside, and since the metal is not thick enough to admit of grinding off to polish for nickel-plating, we hold that hollow rims and tangent spokes should never be nickel-plated, not only for this reason, but because it is almost impossible to clean them, which is necessary when they are nickel-plated, in order to prevent rusting.

For description of Victor enamel, see page 16.

With regard to weights, the fifty inch Victor Light Roadster with saddle and pedals on, ready to ride, weighs about 38 pounds. Other sizes in proportion.

We consider these weights as light as it is safe to make for American roads, and while the machines are light they are so strong and rigid that we do not bespeak for them light riders and good roads. They are built for use on the average American road, and will be found thoroughly staunch and reliable.

See our guarantee on page 24. ☞See testimonials.

Leg Measure.

32-inch leg . .	48-inch wheel.	36-inch leg . .	56-inch wheel.
33-inch leg . .	50-inch wheel.	37-inch leg . .	58-inch wheel.
34-inch leg . .	52-inch wheel.	38-inch leg . .	60-inch wheel.
35-inch leg . .	54-inch wheel.		

These are standard figures for measurement. The rule should be to ride as small a machine as fits well. The Victor being closely built and having a low saddle, a larger wheel can be used than of some other makes.

Summary of Points in Victor Light Roadster.

ALL FORGED STEEL—Not one ounce of cast metal.
TIRES—Finest Para gum, compressed in.
BEARINGS—Bown's Æolus Ball, all round, including pedals.
SADDLE—Victor Swing, detachable leather.
RIMS—Hollow, New Shallow Section, very stiff.
HANDLE BARS Weldless steel tubing, cow-horn shape, and tapered to tips; detachable.
SPOKES—True tangent, tied and soldered at all crossings, attached with long tube nipples.
FORKS AND SPINE—Weldless steel tubing, of thin gauge and large

The Victor Safety even improves on acquaintance, notwithstanding my high estimate at the first. If "perfect" can be applied to any machine, that is the word.
E. P. BURTT, New Haven, Conn.

section.

STEP—Detachable and adjustable.

DUST SHIELD—Perfectly tight, with means for oiling.

HANDLES—Vulcanite, spade pattern; adjustable to any angle.

We claim to be the only makers in the world who have never used cast metal in high grade bicycles.

Prices of Victor Light Roadster Bicycles.

48-inch,	all nickel on copper, except fork-sides, spines, rims and spokes	$122 50
50-inch,	" " " " " "	125 00
52-inch,	" " " " " "	127 50
54-inch,	" " " " " "	130 00
56-inch,	" " " " " "	132 50
58-inch,	" " " " " "	135 00
60-inch,	" " " " " "	137 50

All have spade handles and ball pedals. *No extras.*

Nickel finish, all nickel except rims and spokes, $10 additional.

The above prices are for the machine complete, crated and delivered f. o. b. at Chicopee Falls, Mass., with nickeled B. & S. wrench, nickeled spring top oiler, tool bag and tools for adjusting head. Each item is of the very best and most expensive. See "Interchangeable," page 21.

Victor Enamel.

Six years ago we purchased the American right to use Harrington's Enamel. Since that time we have been constantly experimenting and improving on the process, and to-day we use on all our work the best results of our experience in this line—the Victor Enamel.

We believe this to be far better than any other. It is hard, tough, cannot be affected by the weather, and gives a beautiful finish.

We are now able to make the following very low prices for re-enameling:

Large wheel	$3 50
Small "	1 50
Back-bone	1 75
Fork	1 25

We also quote the following prices for completely re-finishing Victor bicycles, except re-nickeling hubs, which, however, will be enameled without extra charge.

Standard finish, enamel with nickel trimmings	$10 00
Extra finish, rims and spokes enameled, all other parts nickeled	12 00

We think these prices are lower than have ever been made before. After we have "done over" your old machine, the finish on it will be in every respect equal to that on a new machine.

I am satisfied that the Victor is the best machine on the market. My wheel is in use almost continually but the wear is hardly perceptible. It is a good enough wheel for any one to ride. *FRED. D. WOLCOTT, Capt. Peoria (Ill.) Bicycle Club.*

The Victor Safety.

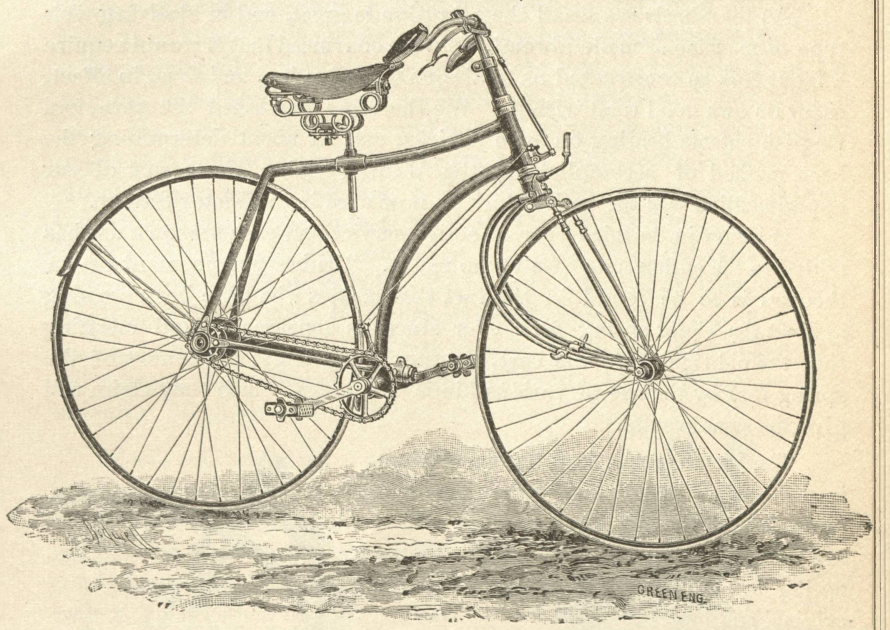

FIG. 22—VICTOR SAFETY.

We were the first in America to make this type of machine, hence our experience has been longer than that of any other American maker, and we are better situated to know what is required of it. The Victor Safety has been so successful that our orders have been constantly in excess of the supply.

As fast as any, absolutely safe, and well adapted for night and rough riding, it is a successful combination of qualities long desired. Men, old and young, have found it a tractable and profitable steed, and it has delighted and captivated those who had formerly held aloof from cycling. This machine, like most of our products, differs from all others. It is one of the articles of our faith never to make blind copies.

By comparison it will be readily seen that other makers have copied leading features of the Victor Safety, in fact, trimming their models from

I believe, the more I see and ride, that the Victor is the Wheel.
FRED F. DOUGLAS, Rockland, Mass.

year to year to get as near to it as possible. We do not find it necessary to copy other makers. The copy always lacks something of the art that produces an original. While we dislike to do the thinking for competitors, we must admit that it is flattering to have them so ready to adopt our devices.

As the wheels are small the vibration is great, and in studying this type of machine as made abroad, we were convinced that it would require a front fork so constructed as to absorb this vibration, and thus, in effect, carry its own good road with it. We therefore purchased the principal English patents bearing on such devices, and set about determining the best method of accomplishing the desired end. The result of our experimenting was the spring fork as now used in the Victor Safety.

It is now in its third year of active service and each season's use has added to the enthusiasm of all who use it. The best indorsement of our theories is to be found in the fact that makers who have been arguing against the Victor spring fork ever since its appearance, and insisting that the old rigid fork was best, are now trying to get the benefit of the spring fork by the use of various kinds of springs, which they claim will give the same results.

The Victor spring fork has revolutionized the Safety Bicycle, and riders may rest assured that the different devices which are claimed to be as good as the Victor spring fork are but poor excuses for the original and best.

One method of absorbing vibration is to enlarge the front wheel. This makes a heavier and clumsier machine, and with an efficient spring fork is entirely unnecessary.

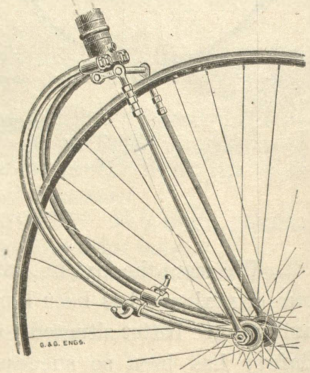

FIG. 23.

A system of jerks is the result of some of the spring forks used. An even flexibility throughout the entire range of the spring is demanded, and it is our opinion that the Victor spring fork is the only device which will give such action.

From riders of the Victor Safety but one opinion will be heard, and that indorsing the spring fork as the very soul of a Safety.

To those who have not ridden this machine, and must select more or less upon theory, we would suggest the comparison of a ride over a rough

It is a great relief to go out for a run, with a certainty that my Victor will not break down, and that it will answer to any calls made upon it.

CHAS. W. HANSON, San Francisco, Cal.

road in a wagon with springs and in a wagon without springs. The difference in cycles will be even greater.

The effect of this device is felt, not only by the rider, but by the machine in every part, as the spring fork cushions the blow of any obstruction, and prevents injury to the machine. To illustrate this, strike a piece of glass with a tack hammer; a light blow shatters it. Face the hammer with rubber and a heavy blow does not crack it.

The spring fork contributes not only to the ease and durability of the machine, but also to its speed, as, when an obstruction is met with, it takes the force of the blow, and instead of the machine being rigidly checked, it rolls softly over the obstruction. This accounts for the fact, established by many trials, that a Victor Safety will out-coast safeties with rigid forks. It is, in fact, the fastest coaster known.

The spring fork has also been found to favor hill-climbing. In the many trials at Eagle Rock Hill the record of the Victor Safety is better than that of any other, it having climbed more times and at greater speed. On Oct. 5, 1888, Fred Coningsby of New York climbed the hill thirteen times without a dismount in 3 hours, 15 minutes, 30 seconds, breaking all previous records.

Many of the hotly contested road races of the past year have been won on Victor Safeties. The machine is made throughout on the interchangeable plan, and is in every way as good as can be made. It is made entirely in our own factory, where the problem is not to cheapen but to perfect.

For instance, we have not undertaken to cheapen this machine, as most makers have, by the use of solid rims, direct spokes, cast hubs, &c., but have introduced all high grade features, as will appear on examination of the machine.

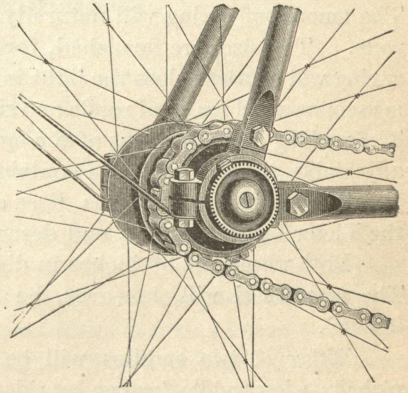

FIG. 24—SAFETY REAR HUB.

Note that the bearing is on the outside of the chain and not in the hub of the wheel, so that the power is applied between the two supported ends of the axle.

We claim to have sold more high grade Safeties than all other American makers combined. Merit alone made this possible. We also claim, and are ready to demonstrate, that in the Victor Safety there is used a more expensive construction than is employed in any other known machine of its type.

Safety Machines give highest satisfaction. Look out for me in the spring.

A. C. WILLISON, Cumberland, Md.

We use hollow rims of the best pattern, tangent spokes, forged steel hubs, and all bearings are Bown's Æolus ball bearings, which are perfectly adjustable for wear.

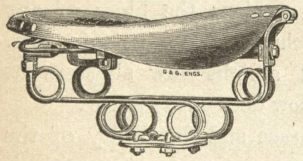

FIG. 25—VICTOR SAFETY SADDLE AND SPRING (DETACHABLE LEATHER).

The Victor safety runs on 176 steel balls, more than double the number in any other safety, in fact all important journals are so made. This will account, in a measure, for the easy running of the machine. The spring fork is composed of four steel rods, made of the steel used in the finest sword blades. Its flexibility depends on 9 feet of steel rods. As the spring comes from an equal strain on so great an area, it will be seen that breakage is almost impossible. Even our competitors have ceased to circulate the statement that the springs were liable to break, three years use having demonstrated that they do not break.

In such a device spring is wanted in two directions; first, and most, vertically; second, fore and aft. For both of these we provide perfectly. Lateral motion is avoided by the stay rods and rocking beam.

The amount of spring will naturally depend on the size of the spring rods. Two sizes are furnished, for heavy and light springs. The heavy spring will be sent unless the light is ordered. The light spring, however, is recommended for good roads and riders of not over 150 pounds weight. The rocking beam bearings of the spring fork are all ball bearings, made adjustable, the rocking beam containing forty balls.

The cranks, pedals, rims, tires and spade handles are the same as in the Victor Light Roadster, and described under that head.

Both wheels are 30 inches in diameter, with ¾ inch rims and tires. The rear wheel will, however, be furnished with ⅞ rim and tire if desired.

Either of two saddles will be furnished; a low saddle for use by riders of 42 inch and upward, (see Fig. 26) and the regular saddle, (see Fig. 25) for 48 inch and upward.

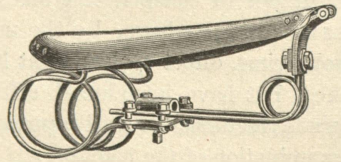

FIG. 26—SAFETY SADDLE NO. 2.

Forged steel foot rests and lamp brackets will be furnished with each machine. The chain is all forged steel and made to gauge throughout. The parts liable to wear are hardened, and special provision is made for lubricating with dry plumbago, which is the best lubricant known for chains. *A better Chain cannot be made.* See Fig. 27.

The novice and mile handicap both won at the meeting on New Year's day, on a Victor Light Roadster, although racers were ridden by some of the competitors, speaks well for the running qualities of the Victor. Besides that I have ridden over 4000 miles upon all sorts of roads.

CHAS. E. TOWNSEND, University of California, Berkeley Cal.

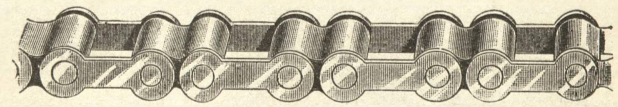

FIG. 27—VICTOR CHAIN.

Handle bars, cranks, pedals, saddle posts and all small parts, such as bolts, nuts &c. are nickeled. All other parts finished in Victor Enamel.

Geared to 51, 54, 57 or 60 inch. Will be sent geared to 54 unless otherwise ordered.

Price, crated, f. o. b. Chicopee Falls, Mass., with tool bag, wrench, spring top oiler and screw driver, $135.00.

See guarantee, page 24. See Interchangeable.

"Interchangeable."

Riders cannot place too much importance upon having the machine they select *INTERCHANGEABLE.* If the parts are not made interchangeable, it means that when a repair is made, each part will *have to be fitted*, and the machine when repaired will be a *patched-up affair*, and the rider's pocket will need to be patched.

The expense of special fitting is always heavy and generally unsatisfactory. Remember the question is not whether you can *fit* the parts of a machine which you propose to ride; it is, *will the parts invariably fit without the slightest alteration? We guarantee that the parts of the Victor bicycle will not require to be fitted.* If you break a Victor bicycle and replace the part it will be *exactly new* at that point, and not a cobbled-up, ill-fitted trap.

If a certain part (say the crank) in ten machines of the same pattern is fitted in ten different ways—as must result by handwork—it is evident that at least nine out of the ten *are wrong*,—*i. e.*, they cannot all be different and all be right.

When made interchangeable, parts, being all made by the *same* dies and cutters, and finished to the *same* gauges, *must be alike.*

"Things which are equal to the same thing, are equal to each other."

I am the possessor of one of your Victor Safeties, and of course believe you to be the makers of the **ONLY** *wheel for men.* *O. B. COMFORT, Bradford, Pa.*

We use hollow rims of the best pattern, tangent spokes, forged steel hubs, and all bearings are Bown's Æolus ball bearings, which are perfectly adjustable for wear.

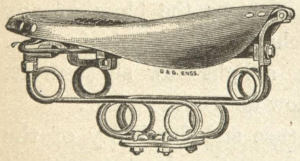

FIG. 25—VICTOR SAFETY SADDLE AND SPRING (DETACHABLE LEATHER).

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In such a device spring is wanted in two directions; first, and most, vertically; second, fore and aft. For both of these we provide perfectly. Lateral motion is avoided by the stay rods and rocking beam.

The amount of spring will naturally depend on the size of the spring rods. Two sizes are furnished, for heavy and light springs. The heavy spring will be sent unless the light is ordered. The light spring, however, is recommended for good roads and riders of not over 150 pounds weight. The rocking beam bearings of the spring fork are all ball bearings, made

We were the first American makers of high grade tricycles. Our latest model has achieved the most marked success of any tricycle we have ever known. In its construction we made our best attempt to interpret the requirements of tricycle users, and to embody in it all the essentials, and as many as possible of the features that were merely desirable and convenient.

The measure of our success is found in the fact that, in the year's experience, we have found no essential point to change, and we present it for the season of '89 knowing that it shows more good features than any other tricycle.

It is adapted to all classes of riders. In general form it is a bicycle-steering central driving tricycle, with differential balance gear and spring fork to front wheel, similar to that used in the Victor Safety.

The driving wheels are thirty-eight inch, and the steering wheel twenty two inch. A larger front wheel is unnecessary, as the only object of the enlarged steering wheel is to overcome the vibration, which

The Victor is the easiest running and best made wheel in town.

W. R. STOCKER, Fresno, Cal.

ened, and special provision is made for lubricating with dry plumbago, which is the best lubricant known for chains. *A better Chain cannot be made.* See Fig. 27.

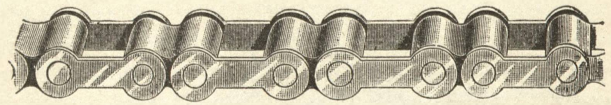

FIG. 27—VICTOR CHAIN.

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Geared to 51, 54, 57 or 60 inch. Will be sent geared to 54 unless otherwise ordered.

Price, crated, f. o. b. Chicopee Falls, Mass., with tool bag, wrench, spring top oiler and screw driver, $135.00.

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"Interchangeable."

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INFLEXIBLE AXLE.

NOTE—The brace rod, A, bolted firmly at the lower end, and adjustable at the joint D, to conform to the length of the chain, prevents the axle from being sprung out of true by the tension of the chain.

We apply our improved band brake to the drum of the balance gear. By this device the band is made to clinch the drum throughout its circumference, thus avoiding an uneven strain.

The tricycle will be furnished either with hand brake or foot brake; foot brake is recommended as being best on every account.

The differential balance gear used distributes the power equally to both wheels, whether going forward or backward, or turning in either direction in short or long curves.

The gears are of forged steel, and cut by machinery to insure accuracy. They run on steel pins, which have bearings at each end. Generally these gears have been made to run on pinions attached at one end only, which has caused serious breakage from the side strain. The balance gear is perfectly inclosed, so that dust and dirt are entirely

I have won my races upon a Victor Light Roadster, and find it as good an all round wheel as any one wants. I shall ride it in the future.

J. SMITH, San Jose, Cal.

The Victor Tricycle.

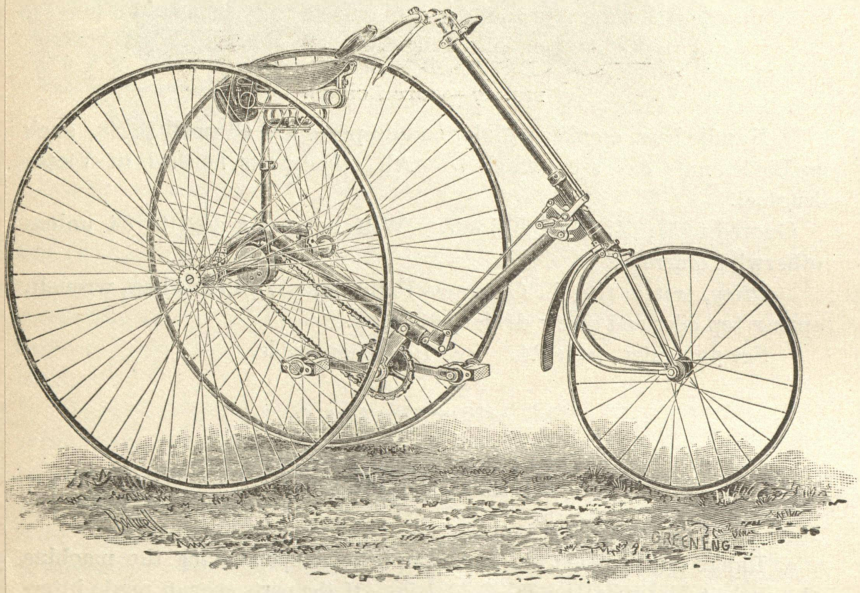

FIG 28—VICTOR TRICYCLE.

We were the first American makers of high grade tricycles. Our latest model has achieved the most marked success of any tricycle we have ever known. In its construction we made our best attempt to interpret the requirements of tricycle users, and to embody in it all the essentials, and as many as possible of the features that were merely desirable and convenient.

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The driving wheels are thirty-eight inch, and the steering wheel twenty two inch. A larger front wheel is unnecessary, as the only object of the enlarged steering wheel is to overcome the vibration, which

The Victor is the easiest running and best made wheel in town.

W. R. STOCKER, Fresno, Cal.

end is accomplished by our spring fork. (See Fig. 23.)

Although our wheels are lighter than those of most of the lightest tricycles, they are much stronger, owing to their fine construction, with hollow rims, compressed tires, true tangent spokes, and forged steel hubs, making the highest grade of wheel known to cycle manufacture.

Other parts we have made heavier than is customary. Experience has shown that the breaking of axles is very common. Our inflexible axle is of solid steel encased in a weldless steel tapered tube.

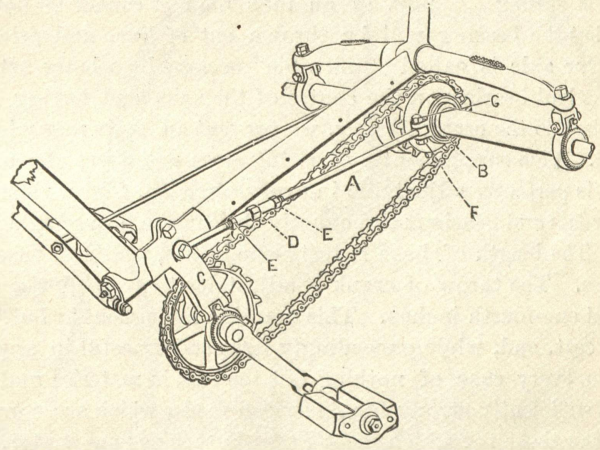


FIG. 29— SECTION OF TRICYCLE FRAME, SHOWING CONSTRUCTION OF INFLEXIBLE AXLE.

NOTE—The brace rod, A, bolted firmly at the lower end, and adjustable at the joint D, to conform to the length of the chain, prevents the axle from being sprung out of true by the tension of the chain.

We apply our improved band brake to the drum of the balance gear. By this device the band is made to clinch the drum throughout its circumference, thus avoiding an uneven strain.

The tricycle will be furnished either with hand brake or foot brake; foot brake is recommended as being best on every account.

The differential balance gear used distributes the power equally to both wheels, whether going forward or backward, or turning in either direction in short or long curves.

The gears are of forged steel, and cut by machinery to insure accuracy. They run on steel pins, which have bearings at each end. Generally these gears have been made to run on pinions attached at one end only, which has caused serious breakage from the side strain. The balance gear is perfectly inclosed, so that dust and dirt are entirely

I have won my races upon a Victor Light Roadster, and find it as good an all round wheel as any one wants. I shall ride it in the future.

J. SMITH, San Jose, Cal.

excluded. It is divided in the centre in such manner that its two faces form an arch which takes the strain of the driving chain, the strain being always at the top of the arch.

The bearings are hung in double swivels, and will automatically adjust themselves to the axle, insuring a true line of bearings. We make the assertion that it is impossible to get a true line of bearings on an axle when three or more bearings are used. 1.—It is practically impossible to make a perfect adjustment in manufacture. 2—If by accident the axle is sprung $\frac{1}{100}$ part of an inch the fact cannot be detected by the eye, but the bearing will be thrown out of line, and friction will result. Our axle is called "Inflexible" because by a brace attached by swivel to a ball bearing on the centre of the axle, and having its lower end attached to the crank hanger, we prevent all springing when power is applied. This supplementary bearing does not affect the axle journals, and is perfectly adjustable in every direction. Tires, rims, spokes, cranks, pedals and bearings are exactly the same as in our Light Roadster Bicycle. The length of base is forty-one inches, width of base twenty-nine inches. The throw of crank is adjustable to five and three-fourths or six and one-fourth inches. This machine throughout is built without regard to cost, and, while exceedingly light and graceful in appearance, our use in every case of nothing but the best in material and devices, renders it sufficiently strong for American roads, which are considerably rougher than those for which most English machines are made. Weight 70 pounds.

Price, complete, with chain guard and lamp bracket, crated, f. o. b., Chicopee Falls, Mass., with nickeled wrench, nickeled spring-top oiler and tool bag, $160.00.

See our guarantee.

Guarantee.

Our machines are guaranteed to be free from imperfections in material or workmanship, and we will replace without charge any parts returned within a year from purchase of the machine which give evidence of such imperfections.

I have for the past eight months been riding a Victor Safety over all kinds of roads, good, bad and indifferent, and am entirely satisfied with it. For ease and comfort there's nothing like it. I consider it the best "all round" wheel made.

ROBERT WHEELER, Milwaukee, Wis.

The Victor Junior.

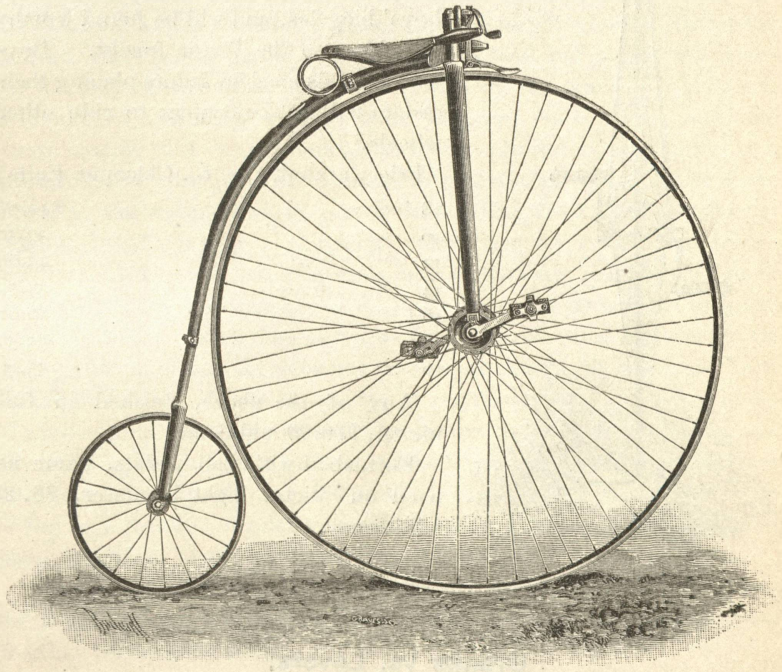


FIG. 30.—VICTOR JUNIOR BICYCLE.

This machine is presented to the rising generation of cyclers. Heretofore bicycles for boys have been like the Frenchman's razor "made to sell and not to shave."

We have often been asked to make boys' bicycles, and when, in accordance with this demand, we decided to build this bicycle, we determined to make it a machine to ride. Its many virtues as a machine to ride will surely make it a machine to sell. While not strictly a high grade bicycle, like the Victor Light Roadster, it is entirely superior to the wheels heretofore in the market for boys. The back-bone and front fork are of regular weldless steel tubing. The hubs, neck and spindle and all working bearings, are of forged steel; the spokes are double tangent, and attached at the rim with nipples.

The stock used in the items above mentioned is just the same as that used in the Light Roadster, so it will be seen that in vital points the

I have been riding a Victor Bicycle for the past three years. Am well pleased with it; think it is the best bicycle made. CHAS. BALTZELL, Little Rock, Ark.

Victor Junior will be abundantly able to perform the work that will be expected of it. It has spade handles, square rubber pedals, ball bearings to front wheel. It is a new departure in boys' bicycles, and will be found worthy to belong to the Victor family. Boys who see this machine before placing their orders will not be content to ride other wheels.

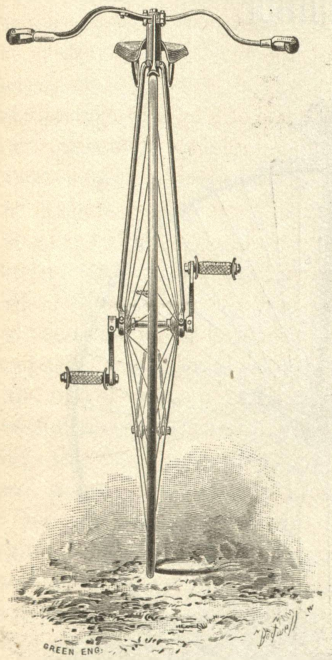


FIG. 31—VICTOR JUNIOR, FRONT VIEW.

Price, crated, f. o. b., Chicopee Falls:

38 inches	$40.00
40 "	42.50
42 "	45.00
44 "	47.50
46 "	50.00
48 "	52.50
50 "	55.00

Any of the above, finished in full nickel, $10.00 additional.

Furnished with ball pedals, same as used on Victor Light Roadster, $6.00 additional.

Cranks vs. Levers.

The question of a motive power for cycles is as old as the first idea of wheel riding. Inventors, after having persistently tried and abandoned every other known motor, —steam, electricity, etc.,—have made every effort to discover the best way of applying leg power.

While nine-tenths of the cycles have always been driven by cranks, in a few cases the attempt has been made to show that power could absolutely be created by the use of levers, and that if the power could be applied on one side only of the axle, avoiding the return stroke of a crank, the result would equal a man's lifting himself over a fence by his boot straps.

In their eager pursuit of this one idea its advocates have lost sight of the fact that the question is of the economical use of the power we have, and that it is as impossible to *create* power as to overcome the laws of gravitation. For hundreds of years the machinery of the world, practically speaking has been driven by cranks. In this fact we have the testimony of the highest mechanical genius the world has known.

I consider it the most perfect wheel made.

H. L. OBERLIN, Columbia, Pa.

Engineers agree that the crank is the only economical method of applying power—that it transmits to the driven shaft ninety-nine per cent. of the power applied. In no class of machinery except cycles is the attempt made to use levers where cranks could be used.

Careful experiments have shown that the use of a lever is misleading, in that, while power can be converted into speed and speed into power, the development of either is at the expense of the other. It is at once evident that with levers we have more friction, more weight, and more complication than with cranks, and that absolutely more power is required, as the springs which are used to return the levers must be forced down at the expenditure of power which should be applied to the propulsion of the machine. Several years ago lever power was tried in England on bicycles and tricycles, and extensively introduced, but has been so generally abandoned that there is to-day no machine of importance so driven. The worst feature of the lever action, however, is that the movement of the foot does not become automatic, as is the case in the use of the crank. There is absence of regularity, and a consequent loss of momentum. A rotary motion is more natural to the feet, being more like walking, while a lever motion is like treading water while swimming, or like constantly climbing upstairs. Not only does the mechanical use of the legs require a regular movement, but it is better to use always the same length of crank, never varying the throw.

A special set of muscles can be trained to such work as the use of the lever action; but such development is abnormal and at the expense of other parts of the body.

Patents.

We are the owners of many United States Patents, and several in England. We warn manufacturers from copying our devices, as we always have patents applied for. We own and control many features of cycle manufacture, both in the United States and England, among the most important of which are:—

Bown's Æolus Ball Bearings.	Bown's Æolus Ball Pedals.
Square Pedal Rubbers.	Victor Swing Saddle.
Overman Spring Fork.	Hadley's Handle Bar.
Compressed Tires.	Hadley's Steering Head.
Harrington's Enamel.	Duplex Whistle, with mouth-piece.
Victor Tricycle Saddle and Spring.	Hadley's Spade Handle.
Spring-top Oilers.	Wicksteed's Acme Bicycle Stand.
Warwick's Hollow Rims.	Foote's Anti-Header.
Overman's Inflexible Axle.	Victor Cyclometer, and many others.

My mount has given unbounded satisfaction.

F. F. BARROWS, Hartford, Conn.

On The Road.

Proud indeed is the record of the Victor in the great road races of the past. We assert without fear of contradiction that more races have been won on the Victor bicycle than on any other.

Though in the form of racer it was the first American machine to hold world records, we count as nothing the performances of racing machines, since they are not what are offered to the public and used on the ordinary roads.

Performances on regular machines and common roads are quite another matter. Such contests indicate plainly the qualities and capabilities of the machines used.

We point with boundless pride to the great road races of the past few years, when such events as Clarksville, Crawfordsville, Big 4, Boston 100 miles, Buffalo 100 miles, Sporting Life 100 miles, all 100 mile events open to the world—have each in turn added new lustre to the fame of the Victor bicycle.

The events named and many others were contested by most of the best makes of machines, and won on Victors.

In very many cases both first and second places have been taken by Victors, and in some instances third and fourth have even been added to these.

In the most notable road racing event of the past year, the Bicycling World 100 mile race at Buffalo, there were eighteen starters, mounted on all the principal makes of bicycles. At the finish Victors held first, second, fourth, fifth and sixth places. Only six men finished at all, and *five* of them rode Victors!

Other makers built special machines for this great race, and hired specially trained men to ride them. We made absolutely no preparation for the race, and no rider entered it in our interest, or at our request. All it cost us was the price of a telegram advising us that Victors had captured everything worth having in the greatest road race of the year. We hire no one to ride our wheels. That a machine can be ridden fast indicates that it runs easily, which argues good material and perfect workmanship.

Cycling Sundries.

The Victor Cyclometers.

A cyclometer, being an instrument of precision, should be first theoretically correct, and next practically accurate.

We have originated and patented special devices for the Victor cyclometers, covering an entirely new and the only system of gearing whereby absolutely uniform register is *possible* for cycle wheels. The

I would not give my Victor for any wheel made.

J. B. HARRIS, Casky, Ky.

Victor cyclometer train of gears is adjusted to the size of cycle wheel by a single exchange wheel corresponding in the number of its teeth to the number of inches in diameter of the cycle wheel. It will readily be seen that the exchange wheel varying in size exactly as the cycle wheel varies, the train, if correct for one size will be correct for all sizes.

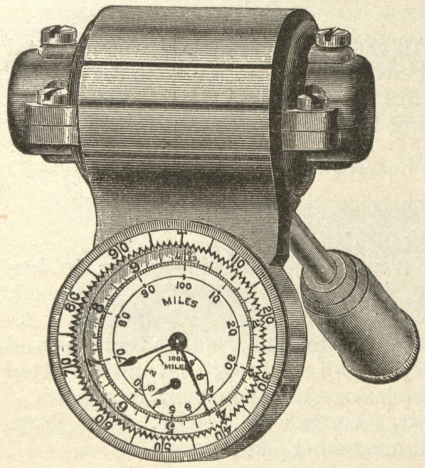


FIG. 32—VICTOR HUB CYCLOMETER.

We guarantee the theoretical and essential error of the Victor cyclometer train to be not over 19 inches in 1000 miles for every size and challenge comparison. By sending the cyclometer to our factory any desired change of size can be obtained at a nominal charge of fifty cents.

The linked pawls interlocking with and positively controlling the first wheel of the train, and methods employed for actuating them in the Victor hub and Victor spoke cyclometers make the instruments practically accurate as they are theoretically correct.

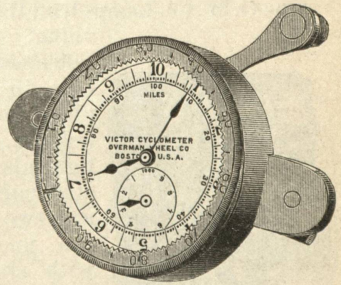


FIG. 33—SPOKE CYCLOMETER.

Our patents cover the above devices, the use of a projecting arm in a spoke cyclometer, and in general the peculiar features noticeable in the Victor cyclometers.

In both forms of the cyclometer the gearing is protected against shock by a spring which limits the amount of force which can be brought to bear upon it, and both forms have also a secondary or trip dial, by which the necessity of noting the reading of your cyclometer at start and stop, and then subtracting the one from the other, to determine the distance traveled, is entirely obviated.

The Victor hub cyclometer has adjustable cone bearings which prevent the rattling common to cyclometers after some usage. The arrangement of parts for attachment to the hub is the most convenient possible. Each instrument is furnished with attachment for substituting a lamp for the regular weight. Price, nickel plated, . . $10.00

The Victor spoke cyclometer is the only one in the market which does not depend upon the force of gravitation for its operation. It is operated by positive contact of the projecting arm with the fork or other fixed part of the vehicle. The proper form and action of this arm have been carefully studied and tested in order to make its operation certain and noiseless. Price, nickel plated, . . .$6.00.

From mechanical, business and pleasure standpoints, the "Victor" is the only wheel on earth. *LEIGHTON PINE, South Bend, Indiana.*

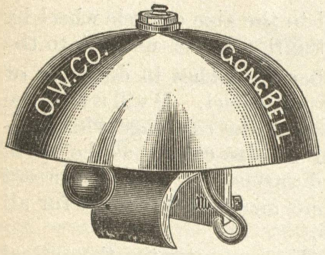


FIG. 34—GONG BELL.

Bells.

All cast bronze, nickeled. Cast metal has a clearer ring than forged metal. Gong bell has a loud, clear ring; strong and nothing to get out of order. Price, $1.00.

Bown's Æolus Ball Pedals.

Ball pedals are as necessary to a high grade machine as ice to ice-water. We present the best article in this line that can be produced. Victor pedals have been most popular ever since their introduction. As we now make them we are very sure they are better, both in features and workmanship, than any others. They are all steel forgings, and are fitted with our original square rubbers which have been so generally copied.

Price, complete, $10.00 per pair. Extra wide, $10.00. Rat Trap, $10.00. See Figs. 17 and 18. All are nickel plated.

Lamps.

The O. W. Co. Lamps lead the market in point of value. All have very deep reflectors, not ruined by a hole in the middle, cut-glass front, and screw wick holders. They show a white light ahead, green light to starboard, red light to port and two red lights astern; are made almost wholly with rivets, and will not melt to pieces as soldered lamps do.

All hub lamps have metal bearings to go on axle, doing away with the screw fenders.

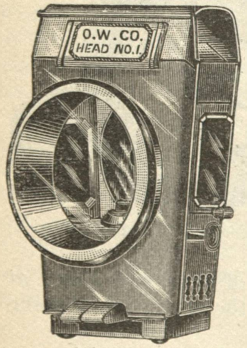


FIG. 35.

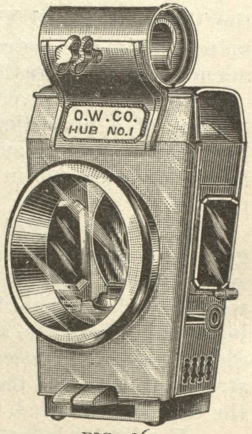


FIG. 36.

Head Light No. 1, enameled	Price, $4.50
Head Light No. 1, nickel plated,	" 6.00
Hub Light, No. 1, enameled	" 5.00
Hub Light, No. 1, nickel plated,	" 7.00

Victor Swing Saddle.

The Victor Swing Saddle is now in its fifth year, and has grown to be a staple article, its features having commanded the preference of the best riders since its first appearance. The principal points are the long

In my ten years' wheeling experience I have found no wheel which has proved so satisfactory as the Victor. Rode mine 1500 miles last season and now find it in A 1 condition. *RICHARD KENNERDELL, Franklin, Penn.*

coil spring, which makes it exceedingly comfortable, and removes a common source of "headers" by its fore and aft motion, and the detachable leather. The latter feature is valuable as a means of locking the machine, as it is removed instantly, and the machine cannot be ridden without it. The leather is easily adjusted to any desired tension.

Price, nickel plated, complete, with clips for attaching, $6.00.

See Figs. 19 and 20. Patented in U. S. and England.

Duplex Whistle.

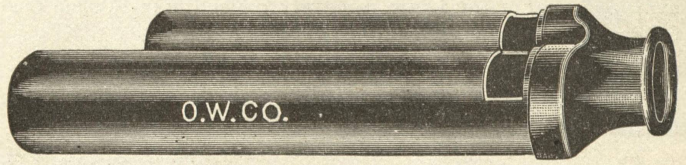


FIG. 37.

This whistle (cut full size, chain not shown) is the generally accepted signal for all cyclists, and should be always ready. As made by us it has several important improvements. It blows with half the wind required by others. It has a beaded mouth-piece, which enables riders to hold it in their teeth, etc., etc. Nickel plated, with chain. Highest quality made. Price, post-paid, 25 cents.

Foote's Anti-Header.

This can be applied to any modern bicycle in two minutes. It prevents the wheel from revolving backward, thus making the pedal mount safe and easy, and making possible a still pedal mount from behind. It is worth its cost as an aid in learning the pedal mount. It prevents all danger of the wheel rolling back, from under the rider, when climbing steep hills. It steadies the running of a bicycle by preventing all kicking up of the little wheel. It makes stacking and resting the wheel easy.

It can be instantly thrown out of action, if desired, when handling the wheel. It makes a safety bicycle out of the ordinary crank machine. It is *not* claimed that this device will prevent all liability to falls, but it *will* prevent nine-tenths of the headers, and add proportionately to the rider's sense of safety and comfort in riding.

Price, post-paid, $1.50

FIG. 38.

Victor Spring-Top Oiler.

No cap to lose. Opened and shut instantly. Cap cannot come off. Clean, convenient, handsome. The finest oiler ever offered to the cycle trade.

Brass, nickel plated. By mail, 25 cents.

Rubber Cement.

For mending tires, one-ounce bottle, 25 cents.

FIG. 39.

FIG. 40.

O. W. Co. Oils.

We put up the best lubricating and lighting oils in our patent spouted cans, which will be found a great convenience and economy in using the oil. These oils are the best made, and we guarantee satisfaction. Our agents are authorized to refund the price where there is any ground for complaint.

Lighting oil, price per quart . . 60 cents.
Lubricating oil, price per pint . . 50 "
For the trade, securely packed in one-dozen cases.
We cannot ship except in full cases.

Handy Hooks.

Handy Hooks have become a great convenience to riders, for holding trousers in place, as a substitute for leggings. They are in great demand in this country and Europe. Each pair mounted on black card, as shown in the cut.

By mail, 10 cents.

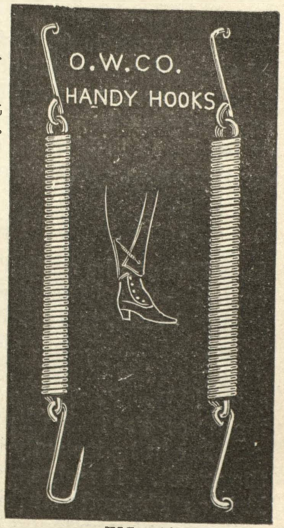


FIG. 42.

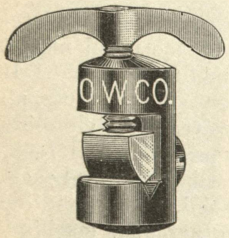


FIG. 41.

Spoke Grip.

Forged steel, nickel plated. New design, compact and very effective.

Price, 60 cents.

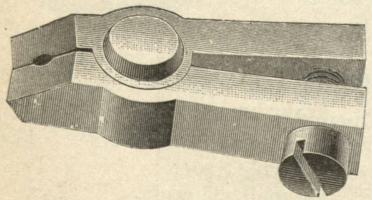


FIG. 43.

Nipple Grip.

We have undoubtedly made the best nipple grip in the market. It is drop-forged, every surface milled and perfectly true. We could not make a better one at any price.

Price, blued, 60 cents.

Victor Hollow Rims.

We use these as the best that can be produced. We are prepared to supply them in all sizes, of our own manufacture. Prices furnished on application. For description, see pages 5 and 6.

We do not drill rims when ordered for other wheels than our own.

Acme Bicycle Stand.

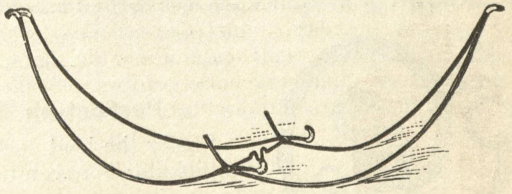


FIG. 44.

The Acme Bicycle Stand was invented by Charles Wicksteed, of England. We purchased the patent, and since then have added this item to our manufacture, for the cycling trade. There is no device which so completely provides for handling the bicycle either side up. It is easy to clean one's machine when inverted on an Acme Bicycle Stand.

Price $2.

Tire Cement.

We are makers of Tire Cement, and much of the cement used in the United States is made by us. It is used by large wheel makers and large dealers throughout the land, and we refer to every one who has used it as to its merits.

If cement is good it must be adhesive and cohesive. It cannot be cohesive if, when pulled out in fine threads (heated), it shows small particles of dirt in its composition. Please heat a piece of O. W. Co. cement and draw it to a fine thread, and notice its clean appearance. We invite comparison in this and all other respects.

The best is the cheapest. 2 oz. sticks 25 cents. Prices furnished to large makers and dealers.

Tool Bags.

NO. 1.

FIG. 45.

NO. 3.

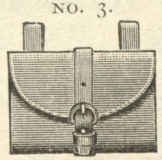


FIG. 46.

NO. 4.

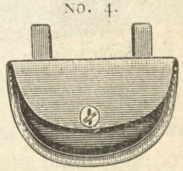


FIG. 47.

Tool Bag No. 1—As furnished with the Victor Light Roadster. Price, $1.50.

Tool Bag No. 3—A very durable bag. Price, $1.50.

Tool Bag No. 4.—Neat appearance, with blocked front of one piece leather. Price $1.50.

Bown's Æolus Ball Bearings.

We have purchased this very valuable patent, and are prepared to supply the bearings or pedals in large or small quantities to wheel makers and users. We are the only makers of this bearing in the United States, and confidently present it as the only perfect ball bearing made. It is impossible to make an adjustable bearing without using this patent, as it covers broadly the method of side adjustment. Any attempt at an adjustment from the bottom is worse than nothing, as it throws the true

circle of the bearing groove into an ellipse. A ring of balls can only be adjusted by a bevelled surface moved laterally.

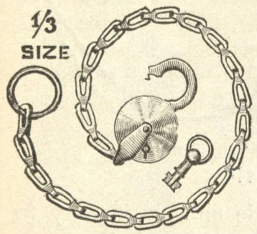


FIG. 48.

Perfection Bicycle Lock.

Easily the best lock in the market. It is "unpickable"—seven tumblers. By mail, $1

Cycle Brush Tool.

This is an article which should be used to be appreciated. The use of a brush for cleaning bearings and other inaccessible parts from sand and dirt, will be found much more satisfactory than any other method. This tool combines a brush of special pattern, a screw driver, a spanner for adjusting bearings, and a sharp point for picking out dirt that may have become encrusted in the parts. Try it and you will be glad you found it. Price 75 cents.

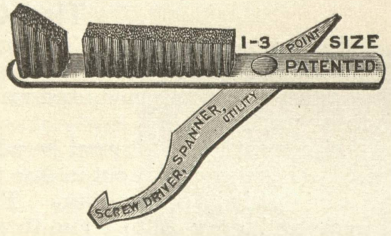


FIG. 49.

Screw Driver.

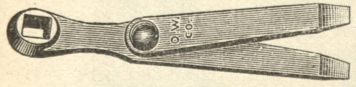


FIG. 50.

Forged steel, hardened. No tool-bag is complete without it.
Price, by mail, 25 cents.

The Handy Carrier.

We have been looking for the best carrier, and would now announce that we have found it. The Handy Carrier weighs six ounces, will carry all the weight you want to put on it, and is instantly attached and detached with one hand without disturbing the bundle or touching a buckle, the bundle being carried as in a shawl strap (see Fig. 52) the part which bears on the brake spoon, forming a perfect handle.

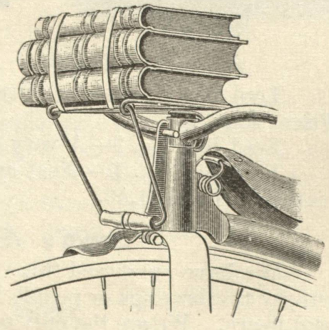


FIG. 51.

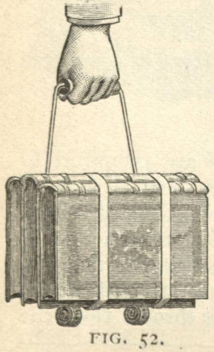


FIG. 52.

We make this carrier, and are prepared to supply the trade, to whom good discounts will be made.
Price nickel plated, $1.00

Plumbago.

Dry—to be applied with a brush to the chain, and to be used with an ordinary oiler for other parts of the machine. When a bearing is glossed over with plumbago, it will run a long time without attention. Safety and tricycle chains should have no other lubricant. It should be used in bearings with oil Price, per can of one-half pound, 50 cents.

As for testimonials, we have all that the most vigorous appetite for such matter could desire.

They come from all parts, far and near, and ascribe to the Victors more virtues than we do ourselves.

They are from those who are in the very best position to *know* what Victors are.

We could not spare room in this book for testimonials, and so have got together a few of them and printed them separately. We think you will be interested to read these as they are the expressions of experienced and discerning riders, many of whom you may know.

The pamphlet will be furnished on application to us direct, or to any of our agents.

Overman Wheel Co.

Price List.

Victor Light Roadster Bicycle	*See page*	16
Victor Junior Bicycle	"	26
Victor Tricycle	"	24
Victor Safety	"	21
Victor Cyclometer, hub, nickeled		$10.00
Victor Cyclometer, spoke, nickeled		6.00
O. W. Co. Head Lamp, No. 1, black		4.50
O. W. Co. Head Lamp, No. 1, nickeled		6.00
O. W. Co. Hub Lamp, No. 1, black		5.00
O. W. Co. Hub Lamp, No. 1, nickeled		7.00
Bown's Æolus Ball Pedals, nickeled, with square rubbers		10.00
Bown's Æolus Ball Pedals, rat-trap		10.00
Bown's Æolus Steel Balls		08
Duplex Whistle, with mouth-piece and chain		25
Spoke Wrench (for direct spokes), steel, nickeled		60
Nipple Grip, for tangent spokes, forged steel, blued		60
B. & S. Wrench, blued		75
B. &. S. Wrench, nickeled		1.00
Acme Wrench, nickeled		75
Gong Bell, nickeled		1.00
Stop Bell, nickeled		1.00
Perfection Bell, nickeled		2.50
Foote's Anti-Header		1.50
Victor Swing Saddle and Spring, nickeled		6.00
Screw Driver, forged steel, hardened		25
Tool Bag No. 1, as furnished with Victor Light Roadster		1.50
Tool Bag, No. 3		1.50
Tool Bag, No. 4		1.50
Handy Hooks (on cards), per pair		10
Long Handy Hooks, "		20
Spring-Top Oiler, brass, nickeled		25
Leather Case for Spring-Top Oiler		50
Cement for Tires, per pound, in ten-pound pipes only		1.00
Cement, per stick, 2 ounces		25
Rubber Cement, for mending tires, 1 ounce bottle		25
O.W.Co.Lubricating Oil, patent spouted cans, per pt. of dealers only		50
O.W.Co.Lighting Oil, patent spouted cans, per qt. of dealers only		60
Acme Bicycle Stand		2.00
O. W. Co. Safety Stand		2.00
Plumbago, dry, half pound		50
Cabinet Photo of Victor Light Roadster Bicycle		15
Cabinet Photo of Victor Tricycle		15
Cabinet Photo of Victor Safety		15
Cabinet Photo of Victor Junior Bicycle		15
O. W. Co. Enamel, 4 ounce bottle		50
Cycle Brush Tool		75
Perfection Lock and Chain		1.00

Victor Hollow Rims, prices on application.

Æolus Ball Bearings, prices on application.

Suggestions.

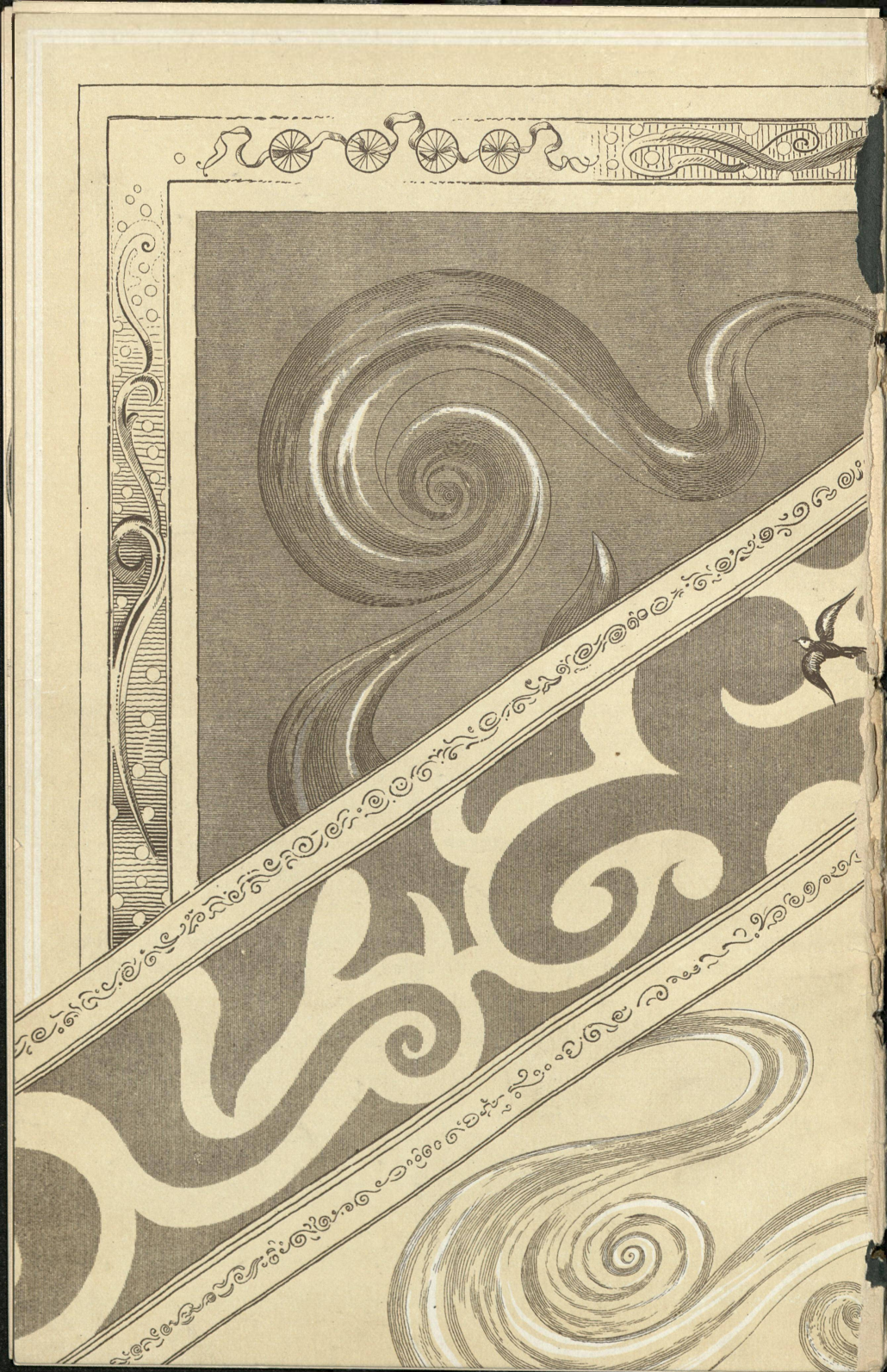
Correspondence must be sent to Boston.

We deliver all goods f. o. b. at Chicopee Falls, Mass., when our responsibility for safe delivery ceases.

No charge for Cases or Cartage.

Our terms are Net Cash with Order.

When goods are ordered C. O. D. a sufficient amount to cover carriage both ways must be remitted.

We make no deviation from our List Prices.

No goods should be shipped to us without first obtaining instructions from our Boston Office.